FAIRCHILD SEMICONDUCTOR™

October 1988
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74F2244
Octal Buffer/Line Driver with 25Ω Series Resistors in Outputs

General Description

The F2244 is an octal buffer/line driver designed to drive the capacitive inputs of MOS memory drivers, address drivers, clock drivers and bus-oriented transmitters/receivers.

The 25Ω series resistors in the outputs reduce ringing and eliminate the need for external resistors.

Features

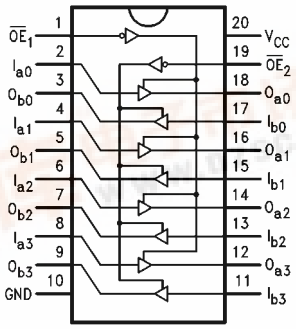
- 3-STATE outputs drive bus lines or buffer memory address registers
- 12 mA source current
- 25Ω series resistors in outputs eliminate the need for external resistors.
- Designed to drive the capacitive inputs of MOS devices
- Guaranteed 4000V minimum ESD protection

Ordering Code:

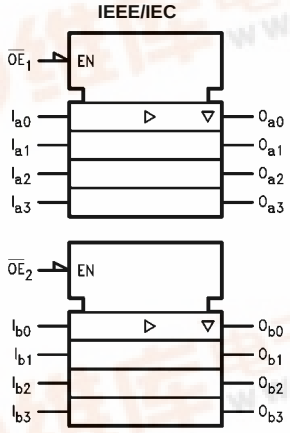
Order Number	Package Number	Package Description
74F2244SC	M20B	20-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-013, 0.300 Wide
74F2244MSA	MSA20	20-Lead Shrink Small Outline Package (SSOP), EIAJ TYPE II, 5.3mm Wide
74F2244PC	N20A	20-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300 Wide

Devices also available in Tape and Reel. Specify by appending the suffix letter "X" to the ordering code.

Connection Diagram



Logic Symbol



Unit Loading/Fan Out

Pin Names	Description	U.L. HIGH/LOW	Input I_{IH}/I_{IL} Output I_{OH}/I_{OL}
$\overline{OE}_1$, $\overline{OE}_2$	3-STATE Output Enable Input (Active LOW)	1.0/1.667	20 μA/–1 mA
OE_2	3-STATE Output Enable Input (Active HIGH)	1.0/1.667	20 μA/–1 mA
I_{an}, I_{bn}	Inputs	1.0/2.667 (Note 1)	20 μA/–1.6 mA
O_{an},O_{bn}	Outputs	750/20	–15 mA/12 mA

Note 1: Worst-case F2244 disabled

Truth Table

$\overline{OE}_1$	I_{an}	O_{an}	$\overline{OE}_2$	I_{bn}	O_{bn}
H	X	Z	H	X	Z
L	H	H	L	H	H
L	L	L	L	L	L

H = HIGH Voltage Level
L = LOW Voltage Level
X = Immaterial
Z = High Impedance

Absolute Maximum Ratings(Note 2)

Storage Temperature	−65°C to +150°C
Ambient Temperature under Bias	−55°C to +125°C
Junction Temperature under Bias	−55°C to +150°C
V_{CC} Pin Potential to Ground Pin	−0.5V to +7.0V
Input Voltage (Note 3)	−0.5V to +7.0V
Input Current (Note 3)	−30 mA to +5.0 mA
Voltage Applied to Output	
in HIGH State (with V_{CC} = 0V)	
Standard Output	−0.5V to V_{CC}
3-STATE Output	−0.5V to +5.5V
Current Applied to Output	
in LOW State (Max)	twice the rated I_{OL} (mA)
ESD Last Passing Voltage (Min)	4000V

Recommended Operating Conditions

Free Air Ambient Temperature	0°C to +70°C
Supply Voltage	+4.5V to +5.5V

Note 2: Absolute maximum ratings are values beyond which the device may be damaged or have its useful life impaired. Functional operation under these conditions is not implied.

Note 3: Either voltage limit or current limit is sufficient to protect inputs.

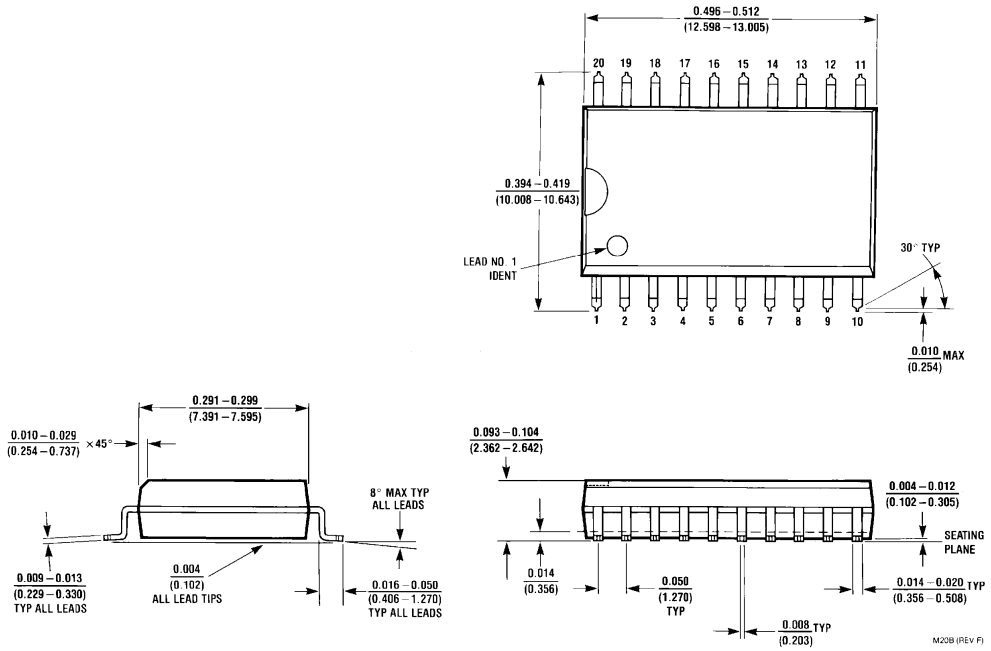
DC Electrical Characteristics

Symbol	Parameter		Min	Typ	Max	Units	V_{CC}	Conditions
V_{IH}	Input HIGH Voltage		2.0			V		Recognized as a HIGH Signal
V_{IL}	Input LOW Voltage				0.8	V		Recognized as a LOW Signal
V_{CD}	Input Clamp Diode Voltage				−1.2	V	Min	I_{IN} = −18 mA
V_{OH}	Output HIGH Voltage	10% V_{CC}	2.4			V	Min	I_{OH} = −3 mA
		10% V_{CC}	2.0					I_{OH} = −15 mA
		5% V_{CC}	2.7					I_{OH} = −3 mA
V_{OL}	Output LOW Voltage				0.50	V	Min	I_{OL} = 1 mA
					0.75			I_{OL} = 12 mA
I_{IH}	Input HIGH Current				5.0	µA	Max	V_{IN} = 2.7V
I_{BVI}	Input HIGH Current Breakdown Test				7.0	µA	Max	V_{IN} = 7.0V
I_{CEX}	Output HIGH Leakage Current				50	µA	Max	V_{OUT} = V_{CC}
V_{ID}	Input Leakage		4.75			V	0.0	I_{ID} = 1.9 µA
	Test							All other pins grounded
I_{OD}	Output Leakage				3.75	µA	0.0	V_{IOD} = 150 mV
	Circuit Current							All other pins grounded
I_{IL}	Input LOW Current				−1.0	mA	Max	V_{IN} = 0.5V ($\overline{OE}_1$, $\overline{OE}_2$, OE_2)
					−1.6			V_{IN} = 0.5V (I_n)
I_{OZH}	Output Leakage Current				50	µA	Max	V_{OUT} = 2.7V
I_{OZL}	Output Leakage Current				−50	µA	Max	V_{OUT} = 0.5V
I_{OS}	Output Short-Circuit Current		−100		−225	mA	Max	V_{OUT} = 0V
I_{CCH}	Power Supply Current			40	60	mA	Max	V_O = HIGH
I_{CCL}	Power Supply Current			60	90	mA	Max	V_O = LOW
I_{CCZ}	Power Supply Current			60	90	mA	Max	V_O = HIGH Z

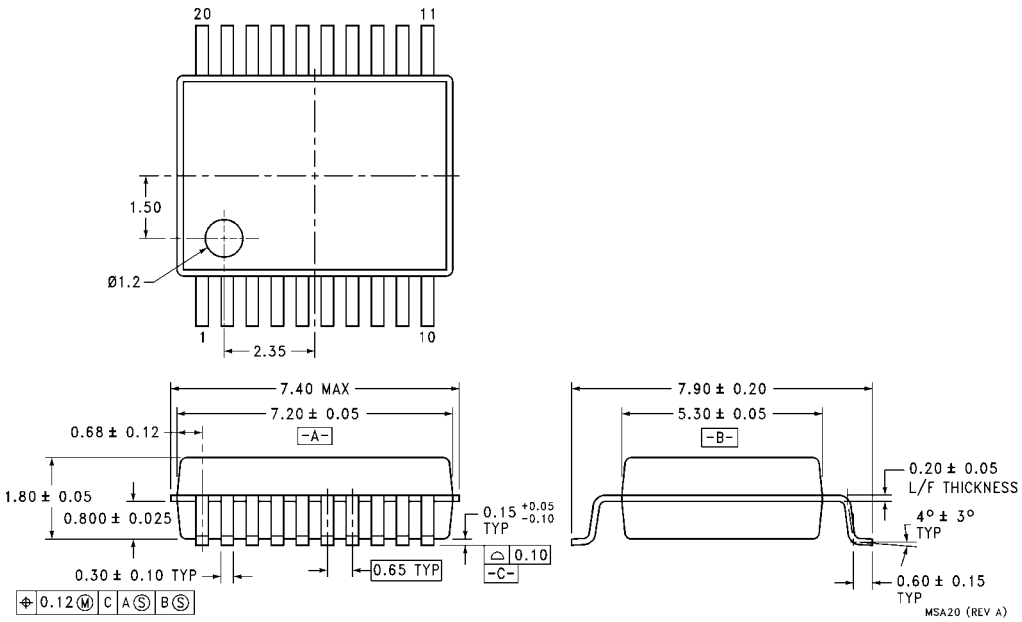
AC Electrical Characteristics

Symbol	Parameter	$T_A = +25°C$, $V_{CC} = +5.0V$, $C_L = 50$ pF			$T_A = -55°C$ to $+125°C$, $C_L = 50$ pF		$T_A = 0°C$ to $+70°C$, $C_L = 50$ pF		Units
		Min	Typ	Max	Min	Max	Min	Max	
t_{PLH}	Propagation Delay	1.5		7.0	2.0	6.5	1.5	7.0	ns
t_{PHL}	Data to Output	2.5		8.0	2.0	7.0	2.0	8.0	
t_{PZH}	Output Enable Time	1.5		9.0	2.0	7.0	1.0	9.5	
t_{PZL}		2.5		11.5	2.0	8.5	2.5	12.0	ns
t_{PHZ}	Output Disable Time	1.5		9.0	2.0	7.0	1.0	9.5	
t_{PLZ}		1.5		8.5	2.0	7.5	1.5	9.5	

Physical Dimensions inches (millimeters) unless otherwise noted

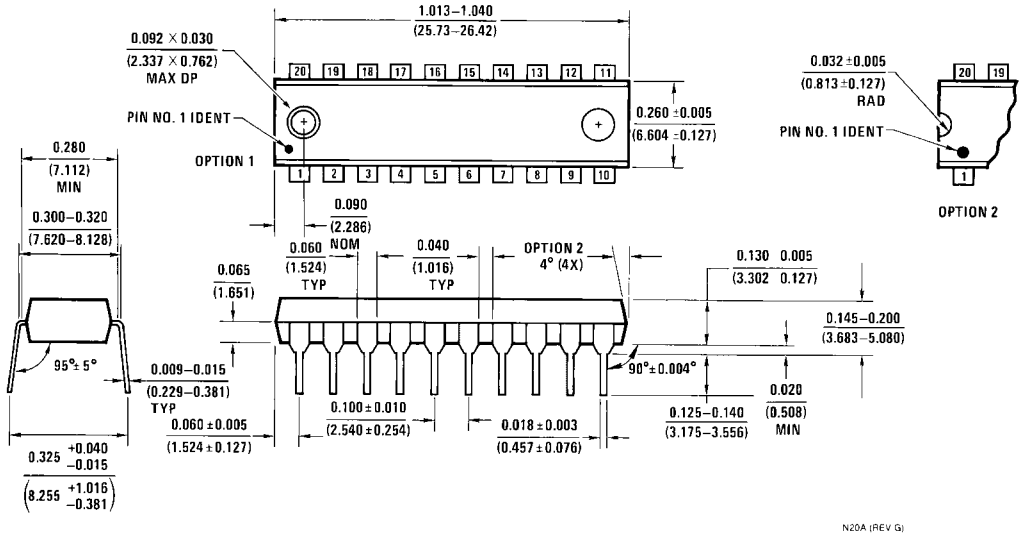


20-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-013, 0.300 Wide
Package Number M20B



20-Lead Shrink Small Outline Package (SSOP), EIAJ TYPE II, 5.3mm Wide
Package Number MSA20

Physical Dimensions inches (millimeters) unless otherwise noted (Continued)



20-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300 Wide
Package Number N20A

LIFE SUPPORT POLICY

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2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

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